Space Weather Forecast

Issued on Friday, 02 December 2022 at 01:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Minor Storm intervals days 1 and 3 (2nd and 4th). Chance of Moderate class flares. CME arrival possible late day 2 or day 3 (3rd or 4th), but low confidence.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with a long period Moderate class flare peaking at 01/0721 UTC, observed from AR3152, now diminished to small and magnetically simple region. Several Common class flares have also been observed, the largest of these peaking at 01/1911 UTC, from AR3153. This region is the largest on the disc, and potentially magnetically complex, although analysis is still uncertain due to the region's proximity to the southeast limb and image foreshortening. The remaining regions on the disc, two numbered and one new region, are all magnetically simple, mostly small and weak.

A moderately fast CME was observed from the Moderate class flare of AR3152, but is not expected to be Earth directed.

Solar Wind / Geomagnetic Activity: The solar wind was indicative of the fast solar winds from a coronal hole. Wind speeds have been Elevated to Strong, peaking at 685 km/s at 01/0159 UTC. The strength of the solar winds magnetic field was initially Moderate, but declined to be weak at below 7nT from 01/0945 UTC. The important north-south component, initially oscillated between moderately positive and negative, settled to become mainly weakly negative. Geomagnetic activity was Unsettled to Active with one period of Minor geomagnetic storms (01/0300-0600 UTC).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low, but with a chance of rising to Moderate with an ongoing potential for M-flares, primarily from the new region in the southeast.
Solar Wind / Geomagnetic Activity: Slow CME arrivals are possible, mainly early day 3 (4th), due to a CME from the 29th from a large line of plasma (or "filament") being released from the Sun. Although confidence is low with the timing. The CME from the Moderate class flare on the 1st is currently not expected to be Earth directed. Otherwise, ongoing coronal hole sourced fast winds are expected to only gradually decline through the period. Unsettled to Active geomagnetic conditions, with an ongoing chance of further Minor storm intervals, are expected for days 1 and 3 (2nd and 4th), with Quiet to Unsettled, and a chance of Active intervals, for days 2 and 4 (3rd and 5th).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	40	20	30	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	25	25	25	25
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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